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## United States Court of Appeals for the Federal Circuit

04-1225  
(Serial No. 07/636,839)

IN RE BRUCE BEASLEY

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DECIDED: December 7, 2004

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Before LOURIE, Circuit Judge, ARCHER, Senior Circuit Judge, and DYK, Circuit Judge.

Opinion for the court filed by Circuit Judge LOURIE. Dissenting opinion filed by Circuit Judge DYK.

LOURIE, Circuit Judge.

Bruce Beasley appeals from the decision of the United States Patent and Trademark Office ("PTO") Board of Patent Appeals and Interferences affirming the rejection of claims 1-6 of U.S. Patent Application 07/636,839 as obvious under 35 U.S.C. § 103. Ex parte Beasley, Appeal No. 2001-2202, Paper No. 38 (B.P.A.I. Aug. 29, 2002) ("Decision on Appeal"); Ex parte Beasley, Appeal No. 2001-2202, Paper No. 40 (B.P.A.I. Oct. 27, 2003) ("Decision on Request for Rehearing"). Because the Board's key factual findings relating to its obviousness analysis are not supported by substantial evidence, the Board erred in concluding that the claims would have been obvious as a matter of law. We accordingly vacate and remand.

## BACKGROUND

On January 2, 1991, Beasley filed U.S. Patent Application 07/636,839 directed to the generation of images or markings on a video display screen using a light pen, so as to point to or otherwise indicate information of interest. Representative claim 1 recites:

1. In a system for forming an image on a display screen scanned in frames by a beam:

a light pen movable relative to the screen and having a light sensing element for providing a signal when the position of the light pen coincides with the position of the beam,

a memory having a plurality of addressable storage locations,

means for mapping the display screen into the memory on a point-by-point basis by sequentially addressing the memory locations in synchronization with the position of the beam to provide a one-to-one correspondence between the memory locations and the points on the screen,

means responsive to the signal from the light pen for writing data into the memory at locations corresponding to the position of the light pen on the screen during successive frames,

means for reading the data out of the memory locations as they are addressed, and

means responsive to the data read out of the memory for producing an image corresponding to the points where the light pen is positioned during successive frames.

(emphases and paragraphing added).

Previously, the '839 application had been the subject of an appeal to this court, which affirmed the rejection of claims 1-6 under 35 U.S.C. §§ 102 and 103 in view of U.S. Patent 3,832,485 ("Pieters"). In re Beasley, No. 99-1055, 1999 WL 515480 (Fed. Cir. July 20, 1999) (nonprecedential) ("Beasley I").<sup>1</sup> Beasley thereafter filed a Continued Prosecution Application, in which he amended independent claims 1 and 4 to

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<sup>1</sup> In Beasley I, claims 1, 3, 4, and 6 had been rejected as being anticipated by Pieters, and claims 2 and 5 had been rejected as being obvious in view of the same. Beasley I, 1999 WL 515480 at \*\*1. Pieters is directed to an apparatus for creating delineations on images using, inter alia, a light pen. Pieters, abstract.

specifically include the feature of "mapping the display screen into the memory on a point-by-point basis . . . to provide a one-to-one correspondence" between the memory locations and the points on the screen (hereinafter referred to as the "point-by-point mapping limitation").<sup>2</sup>

Observing that Pieters, by itself, did not disclose the point-by-point mapping limitation, the examiner rejected the amended claims for obviousness under § 103 in view of Pieters combined with either one of U.S. Patent 3,973,245 ("Belser") or U.S. Patent 4,847,604 ("Doyle").<sup>3</sup> The examiner cited Belser and Doyle as each disclosing "a conventional bit map memory mapping a display screen into the memory on a point by point basis," and that "it would have been obvious to one of ordinary skill in the art to substitute Belser's [or Doyle's] bit map memory" for the content addressable memory ("CAM") used in Pieters. Jan. 7, 2000 Office Action at 2-3. A skilled artisan would have been motivated to make such a combination, alleged the examiner, "because image data stored in the bit map format can be read out rapidly." *Id.*

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<sup>2</sup> In the prior appeal, Beasley argued that the point-by-point mapping limitation was to be read into independent claims 1 and 4, in an attempt to avoid anticipation by Pieters. The court in Beasley I concluded that the language of the claims was not sufficiently narrow to require this limitation to be read therein, and consequently affirmed the anticipation rejection. Beasley I, 1999 WL 515480 at \*\*3. After amending the claims to expressly recite the point-by-point mapping limitation, Beasley is now before us again. Although the point-by-point mapping limitation is cast in means-plus-function form, see 35 U.S.C. § 112, ¶ 6 (2000), the parties do not dispute whether any of the cited references discloses an equivalent structure. Accordingly, we need not identify or consider the structures in Beasley's application that correspond to that function.

<sup>3</sup> Belser concerns a method and apparatus for "converting information in coded form into a dot matrix or raster form," Belser, col. 2, ll. 22-24, and presents in considerable detail an algorithm for reformatting data. Belser, col. 5, l. 23 through col. 9, l. 20. Doyle is directed to a system that allows a user to point to a feature on an image and cause descriptive information (e.g., text or a magnified view) to appear. Doyle, col. 11, l. 13 through col. 12, l. 18.

Beasley responded that the examiner had failed to establish a prima facie case of obviousness because replacing the CAM in Pieters with the memories in Belser and Doyle would require “a complete restructuring” of the system shown in Pieters, which was “not within the purview of obviousness.” Apr. 6, 2000 Resp. to Office Action at 2. Arguing that the cited references failed to provide any motivation for the combination, Beasley stressed that the examiner’s suggestion for the substitution “appear[ed] to be based entirely on applicant’s own disclosure” in an attempt to “piece together” the prior art so as to render the claimed invention obvious. Id. Beasley criticized the rationale proffered by the examiner—that “data stored in a bit map format can be read out rapidly”—as “fall[ing] far short of the necessary motivation for the combination.” Id.

The examiner rejected Beasley’s arguments in a final office action, by repeating the substance of the Jan. 7, 2000 Office Action, and by further alleging that it was “well known in [the] computer display art to substitute a bit map memory for a conventional memory such as the memory used by Pieters.” Jun. 14, 2000 Office Action at 4. Insisting that the “advantage of using . . . bit map memory over . . . conventional memory [was] well recognized,” the examiner listed three advantages: (1) increasing the display rate; (2) ensuring proper correlation of image locations with display locations; and (3) minimizing data processing and storage requirements. Id. In view of those “well recognized” advantages, reasoned the examiner, “it would have been obvious to one of ordinary skill” to make the substitution. Id. at 5.

Beasley appealed the final rejection to the Board, reiterating his arguments against obviousness. The Board agreed with the examiner's reasoning and affirmed<sup>4</sup> the rejection of claims 1-6.<sup>5</sup> Decision on Appeal at 8. The Board found that the cited references suggested to skilled artisans "that if more rapid readout of image data is desired, the bit map memory, rather than the CAM of Pieters, should be employed." Id. at 5-6. With respect to Beasley's restructuring argument, the Board stated that "the artisan skilled in the image display and memory arts would have been well aware of the restructuring" involved when making the substitution. Id. at 6. Disagreeing with Beasley that the examiner's proposed substitution of one memory type for another was "unsupported," the Board reasoned that the "artisan would clearly have understood, from the applied references, the different types of memories available (CAM versus bit map), and their comparative advantages, and would have chosen implementation of one over the other for the advantages sought." Id. Concluding that the examiner established a prima facie case of obviousness, the Board sustained the rejection of claims 1-6.

Beasley filed a request for reconsideration, which the Board denied. Decision on Request for Rehearing at 5. Beasley timely appealed the Board's decision to this court, and we have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

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<sup>4</sup> To the extent the Board adopted the examiner's position as its own, we shall refer to the examiner's findings and conclusions as those of the Board. See In re Paulsen, 30 F.3d 1475, 1478 n.6 (Fed. Cir. 1994).

<sup>5</sup> Our discussion will focus on independent claim 1, and, in particular, the point-by-point mapping limitation. The only other independent claim is claim 4, which is directed to a method, but is otherwise similar to independent claim 1 in all material respects. Since Beasley has not made separate patentability arguments for claim 4, or for any of the dependent claims, those claims will stand or fall together with claim 1. See In re Kaslow, 707 F.2d 1366, 1376 (Fed. Cir. 1983).

## DISCUSSION

A claimed invention may be found to have been obvious “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a) (2000). Whether an invention would have been obvious under § 103 is a question of law based on underlying findings of fact. In re Kotzab, 217 F.3d 1365, 1369 (Fed. Cir. 2000). We review the Board’s legal conclusion of obviousness de novo, and its underlying factual determinations for substantial evidence. In re Gartside, 203 F.3d 1305, 1316 (Fed. Cir. 2000). Substantial evidence is “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” Id. at 1312 (quoting Consolidated Edison Co. v. NLRB, 305 U.S. 197, 229 (1938)).

On appeal, Beasley urges reversal on the basis that the record does not support the Board’s determination that the examiner established a prima facie case of obviousness. For a prima facie case of obviousness to exist, there must be “some objective teaching in the prior art or . . . knowledge generally available to one of ordinary skill in the art [that] would lead that individual to combine the relevant teachings of the references.” In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988). “The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved.” Kotzab, 217 F.3d at 1370.

The presence or absence of a motivation to combine references is a question of fact, In re Dembiczak, 175 F.3d 994, 1000 (Fed. Cir. 1999), which is evaluated under

the substantial evidence standard. Gartside, 203 F.3d at 1316. Beasley contends that we have before us a case of impermissible hindsight reconstruction, in which the examiner's finding of a motivation to substitute the memory used in either Belser or Doyle for the CAM in Pieters rests on generalized statements of advantages without regard to the desirability or the feasibility of modifying Pieters. Given the "subtle but powerful attraction of a hindsight-based obviousness analysis," we require a "rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." Dembiczak, 175 F.3d at 999. This is consonant with the obligation of the Board to develop an evidentiary basis for its factual findings to allow for judicial review under the substantial evidence standard that is both deferential and meaningful. See In re Lee, 277 F.3d 1338, 1344 (Fed. Cir. 2002).

In evaluating the Board's finding of motivation, we look to the record, for "all of the relevant information upon which the Board relied in rendering its decision." Gartside, 203 F.3d at 1314. "That record, when before us, is closed, in that the Board's decision must be justified within the four corners of that record." Id. For the purposes of the present appeal, the record indicates that there have been no less than five occasions, since the filing of the Continued Prosecution Application with the amended claims, on which the Board and the examiner have had the opportunity to develop a factual record that establishes substantial evidence of a motivation to combine Pieters with either Belser or Doyle. They failed to do so in each instance. Our review of (1) the Jan. 7, 2000 Office Action; (2) the Jun. 14, 2000 Office Action; (3) the Feb. 13, 2001 Examiner's Answer; (4) the Decision on Appeal; and (5) the Decision on Request for Rehearing reveals that the assertions pertaining to the advantages of one type of

memory over another that had been advanced by the examiner and the Board for the express purpose of showing motivation for the proposed substitution have been set forth without any supporting citations to relevant portions of either Pieters, Belser, Doyle, or any other authority.

For example, the examiner's allegation in the Jan. 7, 2000 Office Action that "image data stored in the bit map format can be read out rapidly" has been repeated axiomatically throughout the record in justifying the replacement of the CAM in Pieters. Neither the Board nor the examiner has identified in the record any source of information—either from the references cited or otherwise—from which they base their comparison of the relative speed advantages of "bit map memories" over CAMs. Similarly, the assertion in the Jun. 14, 2000 Office Action that the "advantage of using . . . bit map memory over . . . conventional memory" is well recognized" appears unaccompanied by any indication of its origins.<sup>6</sup>

In adopting the examiner's position, the Board made no effort to substantiate the examiner's assertions by invoking any identifiable authority. Instead, the Board relied on the examiner's and its own knowledge as skilled artisans. For example, the Board claimed that "the secondary references" suggested to skilled artisans "that if more rapid readout of image data is desired, the bit map memory, rather than the CAM of Pieters,

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<sup>6</sup> While the abstract of Doyle was cited for the proposition that the use of "bit map memory" ensures proper correlation of image locations with display locations, and minimizes data processing and storage requirements, a closer inspection of Doyle reveals that these "advantages" arise out of a specific arrangement for encoding image information, rather than from any intrinsic characteristic of "bit map memories" in general. Doyle, col. 4, ll. 15-19 ("[T]he advantages . . . stem from encoding information about a video image as a pixel bit map and a color map in which the addresses or indices of the color map are correlated with the addresses or pointers to strings of descriptive information about predefined features of the video image.").



should be employed.” Decision on Appeal at 5-6. Similarly, in dismissing Beasley’s restructuring argument, the Board alleged that a skilled artisan would have been “well aware” of the restructuring involved. Id. at 6. Under the MPEP provisions<sup>7</sup> in effect at the time, such generalized claims of what “the secondary references” teach and of what the skilled artisan would have been “well aware” fail to satisfy the level of specificity that is required. Cf. Kotzab, 217 F.3d at 1371 (“[P]articular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.”). The MPEP provides guidelines for relying on official notice and personal knowledge, which the examiner did not follow in this case:

The rationale supporting an obviousness rejection may be based on common knowledge in the art or “well-known” prior art. The examiner may take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being “well-known” in the art. In re Ahlert, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970) . . .

. . . .  
When a rejection is based on facts within the personal knowledge of the examiner, the data should be stated as specifically as possible, and the facts must be supported, when called for by the applicant, by an affidavit from the examiner. Such an affidavit is subject to contradiction or explanation by the affidavits of the applicant and other persons. See 37 CFR 1.104(d)(2).

. . . .  
For further views on official notice, see In re Ahlert, 424 F.2d 1088, 1091, 165 USPQ 418, 420-421 (CCPA 1970) (“[A]ssertions of technical facts in areas of esoteric technology must always be supported by citation of some reference work” and “allegations concerning specific ‘knowledge’

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<sup>7</sup> The Manual of Patent Examining Procedure (“MPEP”) is commonly relied upon by patent examiners on procedural matters. Litton Sys., Inc. v. Whirlpool Corp., 728 F.2d 1423, 1439 (Fed. Cir. 1984). “While the MPEP does not have the force of law, it is entitled to judicial notice as an official interpretation of statutes or regulations as long as it is not in conflict therewith.” Molins PLC v. Textron, Inc., 48 F.3d 1172, 1180 n.10 (Fed. Cir. 1995).

of the prior art, which might be peculiar to a particular art should also be supported.” . . .

MPEP § 2144.03 (7th ed. 1998) (emphases added); see also MPEP § 2144.03 (7th ed., rev. 1, 2000). Certainly, the relative speed advantages of CAMs vis-à-vis “bitmap memories” and the feasibility of substituting one for the other can hardly be described as a fact that is of “instant and unquestionable demonstration” for the purpose of taking official notice unsupported by any citation.

The record reflects that the examiner and the Board have managed to find motivation for substituting one type of memory for another without providing a citation of any relevant, identifiable source of information justifying such substitution. The statements made by the Examiner, upon which the Board relied, amount to no more than conclusory statements of generalized advantages and convenient assumptions about skilled artisans. At least under the MPEP then in effect, such statements and assumptions are inadequate to support a finding of motivation, which is a factual question that cannot be resolved on “subjective belief and unknown authority.” Lee, 277 F.3d at 1344. Under such circumstances, with respect to core factual findings, “the Board must point to some concrete evidence in the record in support” of them, rather than relying on its assessment of what is “well recognized” or what a skilled artisan would be “well aware.” In re Zurko, 258 F.3d 1379, 1385-86 (Fed. Cir. 2001). “To hold otherwise would render the process of appellate review for substantial evidence on the record a meaningless exercise.” Id. at 1386 (citing Baltimore & Ohio R.R. Co. v. Aberdeen & Rockfish R.R. Co., 393 U.S. 87, 91-92 (1968)).

The PTO, perhaps realizing the deficiencies in the record in this regard, provides numerous citations in its brief to specific passages in Pieters, Belser, and Doyle in a

valiant attempt to muster substantiation for the Board's findings. We cannot consider such post hoc attempts at bolstering the record in our review for substantial evidence. Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168 (1962) ("[C]ourts may not accept appellate counsel's post hoc rationalization for agency action."). Our review must be limited to those grounds relied on and articulated by the Board; otherwise, the applicant may be deprived of a fair opportunity to support his position. See Lee, 277 F.3d at 1345; see also SEC v. Chenery Corp., 332 U.S. 194, 196 (1947) ("[T]he court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis.").

#### CONCLUSION

For the above reasons, we conclude that the Board's determination that Beasley's claimed invention would have been obvious in view of the combination of Pieters with either Belser or Doyle is not supported by substantial evidence. Accordingly, we vacate the Board's decision and remand for further proceedings not inconsistent with this opinion.

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition  
is not citable as precedent. It is a public record.

## United States Court of Appeals for the Federal Circuit

04-1225  
(Serial No. 07/636,839)

IN RE BRUCE BEASLEY

DYK, Circuit Judge, dissenting.

I respectfully dissent. Under our decision in Lee the Board may not rely on common knowledge and common sense in rejecting a claim as obvious. In re Lee, 277 F.3d 1338, 1344-45 (Fed. Cir. 2002). But both the examiner and the Board are presumed to be skilled in the art, id. at 1345, as the majority recognizes, ante at 8. They may properly rely on that knowledge in making rejections for obviousness, but “when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record.” Lee, 277 F.3d at 1345.

That is exactly what the examiner and Board have done here. The patent examiner rejected Beasley’s claims as obvious over Pieters in view of either Besler or Doyle, finding a motivation to combine in the fact that “image data stored in the bit map format can be read out rapidly.” Jan. 7, 2000 Office Action at 2. The examiner sustained his rejection in the subsequent Office Action and specifically addressed Beasley’s argument that there was no motivation to combine. The examiner noted that “[t]he advantage of using the bit map memory over the conventional memory is well recognized” and listed three advantages: (1) increasing the display rate; (2) ensuring proper correlation of image locations with display locations; and (3) minimizing data processing and storage requirements. June 14, 2000 Office Action at 4. The Board

agreed with the reasoning of the examiner and further found that an "artisan skilled in the image display and memory arts would have been well aware of the restructuring and manners of address which would need to be changed in order to substitute one type of memory for another." Ex parte Beasley, Appeal No. 2001-2202, Paper No. 38, at 6 (B.P.A.I. Aug. 29, 2002). I see no error in the Board's reliance on the PTO's own specialized knowledge. The effect is merely to create a prima facie case, and to shift the burden to the patent applicant. Here the applicant did not refute the factual findings of the Board and the patent examiner, but merely offered lawyer argument to contradict the Board's findings. Under these circumstances the application was properly rejected.

With this said, I agree that the MPEP provision in effect at the time is not a model of clarity and can be read as recognizing only a very limited scope for the use of the PTO's expertise. MPEP § 2144.03 (7th ed. 1998). However, the current version appears to allow greater latitude. MPEP § 2144.03 (8th ed., rev. 2, 2004). In future cases, where the PTO has provided us with an interpretation of the new MPEP provisions, we will need to address the extent to which the new version of the MPEP gives the PTO greater scope to rely on its own expert knowledge.